

Appl. No. 10/672,437
Amdt. Dated 08/24/2006
Reply to Office Action of February 28, 2006

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A hot swappable pulse width modulation switching regulator controller comprising:
 - a hot swap transistor having a control terminal;
 - a pulse width modulation ~~switching regulator controller~~ circuit coupled in series with the hot swap transistor, the pulse width modulation circuit including a pulse width modulation control circuit coupled to at least one switching transistor for switching the switching transistor on and off at a frequency determined by the pulse width modulation control circuit;
 - a hot swap circuit coupled to a control terminal of the hot swap transistor;
 - the hot swap circuit, when the hot swap circuit and the series combination of the hot swap transistor and the pulse width modulation ~~switching regulator controller~~ circuit are coupled to a source of power having a power source voltage, turning on the hot swap transistor by changing a voltage on the control terminal at a controlled rate in spite of the sudden application of power to the hot swappable pulse width modulation switching regulator controller, and maintaining the hot swap transistor on until the hot swappable pulse width modulation switching regulator controller is no longer coupled to a source of power having the power source voltage;
 - ~~whereby power is applied to the pulse width modulation switching regulator controller circuit at a controlled rate in spite of the sudden application of power to the hot swappable pulse width modulation switching regulator controller;~~
 - the pulse width modulation ~~switching regulator controller~~ circuit and the hot swap circuit being in a single integrated circuit.
2. (Currently Amended) The hot swappable pulse width modulation switching regulator controller of claim 1 wherein the controlled rate ~~is~~ provides a predetermined rate of voltage increase across the pulse width modulation control circuit.

Appl. No. 10/672,437
Amdt. Dated 08/24/2006
Reply to Office Action of February 28, 2006

3. (Currently Amended) The hot swappable pulse width modulation switching regulator controller of claim 1 wherein the controlled rate is a rate ~~limiting a~~ providing a controlled current through the hot swap transistor ~~to a predetermined maximum current.~~

4. (Currently Amended) The hot swappable pulse width modulation switching regulator controller of claim 1 wherein the controlled rate is a predetermined rate of voltage increase across the pulse width modulation control circuit, or a rate providing a controlled current ~~limiting a current~~ through the hot swap transistor ~~to a predetermined maximum current~~, whichever limit occurs first.

5. (Original) The hot swappable pulse width modulation switching regulator controller of claim 1 wherein the hot swap transistor is part of the integrated circuit.

6. (Original) The hot swappable pulse width modulation switching regulator controller of claim 1 wherein the hot swap transistor is a discrete transistor.

7. (Original) The hot swappable pulse width modulation switching regulator controller of claim 1 wherein the pulse width of the pulse width modulation switching regulator controller circuit starts with a minimum pulse width and increases until the output of a pulse width modulation converter coupled thereto is within regulation.

8. (Previously Presented) The hot swappable pulse width modulation switching regulator controller of claim 7 wherein the pulse width modulation switching regulator controller circuit will start when the voltage applied to the pulse width modulation switching regulator controller circuit approaches the power source voltage.

9. (Previously Presented) The hot swappable pulse width modulation switching regulator controller of claim 8 wherein the pulse width modulation switching regulator controller circuit will not start until the voltage applied to the pulse width modulation switching regulator controller circuit exceeds a predetermined voltage less than the power source voltage.

Appl. No. 10/672,437
Amdt. Dated 08/24/2006
Reply to Office Action of February 28, 2006

10. (Original) The hot swappable pulse width modulation switching regulator controller of claim 1 wherein the pulse width modulation switching regulator controller circuit will start when the voltage applied to the pulse width modulation switching regulator controller approaches the voltage of the source of power.

11. (Original) The hot swappable pulse width modulation switching regulator controller of claim 10 wherein the pulse width modulation switching regulator controller will not start until the voltage applied to the pulse width modulation switching regulator controller exceeds a predetermined voltage.

12. (Currently Amended) The hot swappable pulse width modulation switching regulator controller of claim 1 ~~further comprising wherein the at least one switching transistors transistor is in the integrated circuit, the switching transistors being coupled to an output of the pulse width modulation switching regulator controller circuit.~~

13. (Canceled)

14. (Canceled)

15. (Currently Amended) A hot swappable pulse width modulation converter comprising:

a hot swap transistor; and,

an integrated circuit comprising

a pulse width modulation switching regulator controller coupled in series with the hot swap transistor;

a hot swap circuit coupled to a control terminal of the hot swap transistor;

the hot swap circuit, when the hot swap circuit and the series combination of the hot swap transistor and the pulse width modulation switching regulator controller are suddenly coupled to a source of power, turning on the hot swap transistor by changing the voltage on the control terminal at a controlled rate, and maintaining the hot swap transistor on until the hot swap circuit and the series combination of the hot swap

Appl. No. 10/672,437
Amdt. Dated 08/24/2006
Reply to Office Action of February 28, 2006

transistor and the pulse width modulation switching regulator controller are no longer coupled to a source of power;

~~whereby power is applied to the pulse width modulation switching regulator controller at a controlled rate in spite of the sudden application of power to the hot swappable pulse width modulation switching regulator controller.~~

16. (Currently Amended) The hot swappable pulse width modulation converter of claim 15 wherein the controlled rate ~~is~~ provides a predetermined rate of voltage increase across the pulse width modulation switching regulator controller.

17. (Currently Amended) The hot swappable pulse width modulation converter of claim 15 wherein the controlled rate is a rate ~~limiting~~ providing a controlled current through the hot swap transistor ~~to a predetermined maximum current.~~

18. (Currently Amended) The hot swappable pulse width modulation converter of claim 15 wherein the controlled rate is a predetermined rate of voltage increase across the pulse width modulation control circuit, or a rate providing a controlled ~~limiting~~ a current through the hot swap transistor ~~to a predetermined maximum current~~, whichever limit occurs first.

19. (Original) The hot swappable pulse width modulation converter of claim 15 wherein the hot swap transistor is part of the integrated circuit.

20. (Original) The hot swappable pulse width modulation converter of claim 15 wherein the hot swap transistor is a discrete transistor.

21. (Previously Presented) The hot swappable pulse width modulation converter of claim 15 wherein the pulse width of the pulse width modulation switching regulator controller starts with a minimum pulse width and increases until the output of the pulse width modulation converter is within regulation.

Appl. No. 10/672,437
Amdt. Dated 08/24/2006
Reply to Office Action of February 28, 2006

22. (Previously Presented) The hot swappable pulse width modulation converter of claim 21 wherein the pulse width modulation switching regulator controller will start when the voltage across the hot swap transistor falls below a predetermined voltage.

23. (Previously Presented) The hot swappable pulse width modulation converter of claim 22 wherein the pulse width modulation switching regulator controller will not start until the voltage applied to the pulse width modulation switching regulator controller exceeds a predetermined voltage.

24. (Previously Presented) The hot swappable pulse width modulation converter of claim 15 wherein the pulse width modulation switching regulator controller will start when the voltage across the hot swap transistor falls below a predetermined voltage.

25. (Previously Presented) The hot swappable pulse width modulation converter of claim 24 wherein the pulse width modulation switching regulator controller will not start until the voltage applied to the pulse width modulation switching regulator controller exceeds a predetermined voltage.

26. (Previously Presented) The hot swappable pulse width modulation converter of claim 15 comprises a single integrated circuit plus the hot swap transistor as a discrete transistor.

Claims 27-30 (Canceled)